REMARKS

In the November 16, 2004 Office Action, claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,230,713 to Schauer in view of Applicant's Admitted Prior Art and further in view of U.S. Patent No. 6,032,358 to Carroll, and claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer, as modified by Applicant's Admitted Prior and Carroll, in view of U.S. Patent No. 5,735,697 to Muzslay.

By the present amendment, claims 5 and 9 are amended and new claims 11 and 12 are added, leaving claims 1-12 pending in this application with claims 1, 6 and 11 being independent.

The rejections over prior art are respectfully traversed because none of the prior art either alone or in combination discloses, teaches or suggests a flat cable for a clockspring with conductors disposed two insulating layers with the conductors printed onto one of the insulating layers of the cable.

Claim Rejections – 35 U.S.C. 103(a)

Claims 1-9 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent No. 5,230,713 to Schauer in view of Applicants' Admitted Prior Art and further in view of U.S. Patent No. 6,032358 to Carroll. However, none of Schauer, Applicants' Admitted Prior Art, Carroll, or any combination thereof teaches or suggests a flat cable with conductors printed onto an insulating layer of the cable.

Initially, Applicants note that apparatus claims may recite either structural and/or functional features. See MPEP § 2114. Moreover, contrary to the assertion in the Office Action, independent claims 1 and 6 do not recite a method of printing conductors on an insulating layer. Instead, the claimed invention recites conductors printed onto the insulating

layer. Therefore, the claim invention does not cover what the cable does but covers what the cable is, that is including conductors printed onto one of its insulating layers, as is permissible. Furthermore, the claimed invention distinguishes the prior art, such as Applicants' Admitted Prior Art, by its structure and not by its function. More specifically, the cable of Applicants' Admitted Prior Art includes conductors adhesively bonded to the insulating layers. In contrast, the claimed invention recites a cable which includes conductors printed on the insulating layer. Additionally, the claimed invention must be considered as a whole. See MPEP 2141.02. Therefore, claim limitations, such as conductors printed on the insulating layers, cannot be disregarded. *Jones v. Hardy,* 727 F.2d 1524, 1530 (Fed. Cir. 1984). Therefore, the claim limitation of "conductors printed onto one of the insulating layers" should be given patentable weight along with the remaining limitations of independent claims 1 and 6.

None of Schauer, Applicants' Admitted Prior Art, Carroll or any combination thereof discloses teaches or suggests a flat cable for a clockspring with conductors disposed between two insulating layers and printed onto one of the insulating layers of the cable. Schauer discloses a ribbon cable 10 with conductors 11 soldered to contacts 14 fastened in an insulative contact holder 17 (col. 3, lines 55-59 and col. 4 lines 3-6). Applicants' Admitted Prior Art discloses a flat cable 10 with conductors 20 adhesively bonded between two transparent insulating layers. Neither Schauer nor Applicants' Admitted Prior Art teaches conductors printed on an insulating layer of the cable. Carroll describes a flexible circuit that includes a dielectric substrate with conductive inks printed on its surface to define circuit traces. However, nothing in Carroll teaches or suggests conductors located between two insulating layers of a flat cable with the conductors printed on one of those layers.

Moreover, there is no motivation to modify Schauer or Applicants' Admitted Prior Art to use the flexible circuit of Carroll because neither Carroll nor the Office Action

suggests an advantage to using conductors printed on an insulating layer. A prima facie case of obviousness requires a suggestion of the desirability of making the combination. See MPEP § 2141. Whether or not a solder connection is used between a terminal and a flexible circuit, as suggested in the Office Action, is irrelevant to use of conductors printed on an insulating layer. When considering the claimed invention as a whole, as required by MPEP § 2141.02, nothing in the prior art or any combination thereof teaches or suggests a flat cable having conductors located between two insulating layers and the conductors printed on one of those layers.

In view of the above, Applicants believe a prima facie case of obviousness has not been established. Therefore, the rejection of independent claims 1 - 6 under 35 U.S.C. 103(a) should be withdrawn and the claims allowed.

Dependent claims 2-5 and 7-10 are also allowable for the same reasons. Moreover, these claims recite additional features not found in the prior art. For example, claims 3 and 7 recite that the contacts on the mounting header are curved to provide a larger surface area for connection to the conductors in the flat cable. In contrast, the conductors 14 of Schauer are molded or inserted in the holder 17 and therefore do not provide a greater surface area for connection. It is striker parts 29 of Schauer that provide the greater surface areas or flat zones for soldering the conductors 11 to the conductors 14, as seen in Fig. 6 and described on col. 4, lines 52 – 55. The striker parts 29 are not curved. The bent portions of conductors 14 of Schauer are encased in the holder 17 and therefore those bent portions could not connect to anything.

Also, claims 5 and 9, as amended, recite that the contacts on the mounting header are straight and are inserted through circular apertures on the flat cable and secured to the apertures for electrical connection to the conductors. Although Carroll teaches pins 80 inserted through apertures 80, the apertures 80 are made in conjunction with flaps 74

designed to create a wiping action, thereby obviating the need for soldering. In contrast, claims 5 and 9 recite that the contacts are secured to the circular apertures. For example, the conductors 66 of the application can be secured to the apertures 62 by soldering (see page 9, lines 9-12 of Applicants' disclosure). One skilled in the art would not use the pin and aperture arrangement as taught by Carroll to secure contacts to apertures, such as by soldering, because the electrical traces 20 of Carroll are coated on the wrong side of the substrate 42. More specifically, the pin 90 of Carroll would have to be inserted from the side on which the traces are coated in order for the substrate to function as a female electrical connector (see col. 4, lines 56-67), thereby making the area with the conductive coating inaccessible for securing the connection, such as by a soldering apparatus.

Claim 10 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Schauer, as modified by Applicants' Admitted Prior Art and Carroll, in view of U.S. Patent No. 5,735,697 to Muzslay. Initially, because claim 10 depends from claim 1, claim 10 is allowable for the same reasons discussed above.

The Office Action first asserts that moving the Schauer holder 17 from the end portion of the ribbon 10 to an intermediate portion is an obvious rearrangement of parts. However, locating the mounting header of the claimed invention on an intermediate portion of the flat cable is not a mere rearrangement of parts but instead facilitates the incorporation of two extended electrical signal lines and associated connectors into a single assembly. This incorporation obviates the need for two additional wire harnesses and at least one additional connector, which would have otherwise been required.

The Office Action next asserts that Muzslay shows substantially the same structure as the claimed invention. However, if connector 12A of Muzslay is interpreted as the mounting header located at an intermediate portion, then the portions 130S and 130Q cannot be characterized as extensions, but rather must be characterized as opposite extreme portions.

Alternatively, if portions 130S and 130Q are interpreted as extensions, then the connector 12A must be characterized as an extreme instead of an intermediate portion.

Therefore, a prima facie case of obviousness has not been established with respect to claim 10. Thus, Applicants believe the rejection of claim 10 under 35 U.S.C. 103(a) should be withdrawn and the claim allowed.

New Claims 11 and 12

New independent claim 11 recites a method for making a flat cable including the steps of placing conductors between a pair of insulating layers of the cable and printing the conductors onto one of the insulating layers. As discussed above, none of the prior art alone or in combination teaches a cable including conductors between two insulating layers with the conductors printed on one of the layers or the method of making such a cable. Therefore, new claim 11 is believe allowable over the prior art. New claim 12 depends from claim 11 and is therefore allowable for the same reasons.

In view of the foregoing, claims 1-12 are believed to be in allowable condition. Prompt and favorable treatment is respectfully solicited.

Please charge any shortage of fees or credit any overpayment thereof to BLANK ROME, LLP, Deposit Account No. 23-2185 (115584-00343).

Respectfully submitted,

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